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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/673,266	11/29/2000	Ernst Eberlein	41002	3624

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EXAMINER

VARTANIAN, HARRY

ART UNIT	PAPER NUMBER
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2634

DATE MAILED: 08/06/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/673,266

Applicant(s)

EBERLEIN ET AL.

Examiner

Harry Vartanian

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 November 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 19-58 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 23-27, 32-37 and 54-58 is/are allowed.
- 6) ☒ Claim(s) 19-21, 28, 29, 31, 41-43, 45-47, 50 and 51 is/are rejected.
- 7) ☒ Claim(s) 22, 30, 38-40, 44, 48, 49, 52 and 53 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11/29/2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 5, 7.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

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Detailed Action

Claims 19-58 are pending in this case.

Claim Objections

1. Claim 38-40, 44, 48, 49, 53 are objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim *cannot depend from any other multiple dependent claim*. See MPEP § 608.01(n). Accordingly, the Claims have not been further treated on the merits.

2. Claims 41-43 recites the limitation "said at least two carriers". There is insufficient antecedent basis for this limitation in the claim. Therefor Claims 41-43 are objected. A recommended change is to "said at least two ***simultaneous encoded*** carriers".

3. Claims 54-58 are objected to because of the following informalities: the Claims declare variables (a,b) and (ϕ) in parentheses that are later used in equations. A better way to write these Claims would be to remove the parentheses. Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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Claims 41-43, 45-47 are rejected under 35 U.S.C. 102(b) as being anticipated by

Moose(United States Patent# 5,166,924). Regarding Claim 41, Moose meets the following limitations of the Claim:

means for recovering said information by differential decoding of respective parameters of said at least two carriers. **(Column 12, Lines 25-27) (Claim 5, Lines 5-16)**

Regarding Claim 42, Moose meets the following limitations of the Claim:

wherein said means for recovering said information is adapted to differential decode respective phases and/or amplitudes of said at least two carriers. **(Column 12, Lines 25-27) (Claim 5, Lines 5-16)**

Regarding Claim 43, Moose meets the following limitations of the Claim:

wherein said means for recovering said information comprises means for decoding respective parameters of at least two carriers which are adjacent in the frequency axis direction. **(Claim 5, Lines 5-16)**

Regarding Claim 45, Moose meets the following limitations of the Claim:

a differential phase decoder for decoding phase shifts based on a phase difference between simultaneous carriers having different frequencies; **Moose (Column 12, Lines 25-27)**

means for recovering bits of a bitstream from said phase shifts. **Moose fig 7 fig 4a.**

Regarding Claim 46, Moose meets the following limitations of the Claim:

means (140) for performing a Fourier transform to derive a multi-carrier modulated symbol, said multi-carrier modulated symbol comprising complex carrier symbols; and **fig 2b**

means (142) for recovering respective phase shifts from said complex carrier symbols. **fig 4**

Regarding Claim 47, Moose meets the following limitations of the Claim:

wherein said differential phase decoder is adapted for decoding phase shifts based on a phase difference between simultaneous carriers which are adjacent in the frequency axis direction. **(Claim 5, Lines 5-16)**

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having

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ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. Claims 19-21, 28-29, 31, 50-51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Moose(United States Patent# 5,166,924) in view of Andren et al(United States Patent #5,732,105). Regarding Claim 19, Moose meets the following limitations of the Claim:

differential phase decoding phase shifts based on a phase difference between simultaneous carriers having different frequencies; **Abstract**

determining an echo phase offset for each decoded phase shift by eliminating phase shift uncertainties related to the transmitted information from said decoded phase shift; **Abstract**

In Moose's echo cancellation invention for multi-carrier systems he fails to teach the use of an average value of echo phase offset to correct a received signal.

However, Andren et al's DQPSK invention meets the following limitations of the Claim:

averaging said echo phase offsets in order to generate an averaged offset; and **(Column 3, Lines 30-32) (Column 3, Lines 44-49); (Column 2, Lines 53-56)**

correcting each decoded phase shift based on said averaged offset. **(Column 3, Lines 30-32) (Column 3, Lines 44-49)**

Therefor it would have been prima facie obvious to use an average of a phase offset to remove echo components in an OFDM system. A motivation to combine is that it is well known in the art that the use of an average phase value can give a more accurate indication of the state of a system versus erroneous variations(Moose discusses more in "A Technique

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for OFDM frequency offset correction", Pg. 2910, section *Statistical Properties of the Estimate*)

Regarding Claim 20, Moose meets the following limitations of the Claim:

wherein said step of differential phase decoding comprises the step of differential phase decoding phase shifts based on a phase difference between simultaneous carriers which are adjacent in the frequency axis direction. **(Column 12, Lines 25-27) (Claim 5, Lines 5-16)**

Regarding Claim 21, Moose meets the following limitations of the Claim:

wherein said step of differential phase decoding comprises the step of differential phase decoding phase shifts based on phase differences between at least three simultaneous carriers which are equally spaced in the frequency axis direction. **(Column 12, Lines 25-27) (Claim 5, Lines 5-16)**

Regarding Claim 28, the rejection for Claim 19 above meets the limitations of the Claim.

Regarding Claim 29, the rejection for Claim 20 above meets the limitations of the Claim.

Regarding Claim 31, the rejection for Claim 21 above meets the limitations of the Claim.

Regarding Claim 50, the rejection for Claim 19 above meets the limitations of the Claim.

Regarding Claim 51, the rejection for Claim 20 above meets the limitations of the Claim.

Allowable Subject Matter

5. Claims 23-27, 32-37, 54-58 are allowed.

6. Claims 22, 30, 52 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Harry Vartanian whose telephone number is 703.305.8698. The examiner can normally be reached on 10:00-6:30 Mondays to Fridays.


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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Chin can be reached on 703.305.4714. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Harry Vartanian
Examiner
Art Unit 2634

HV



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